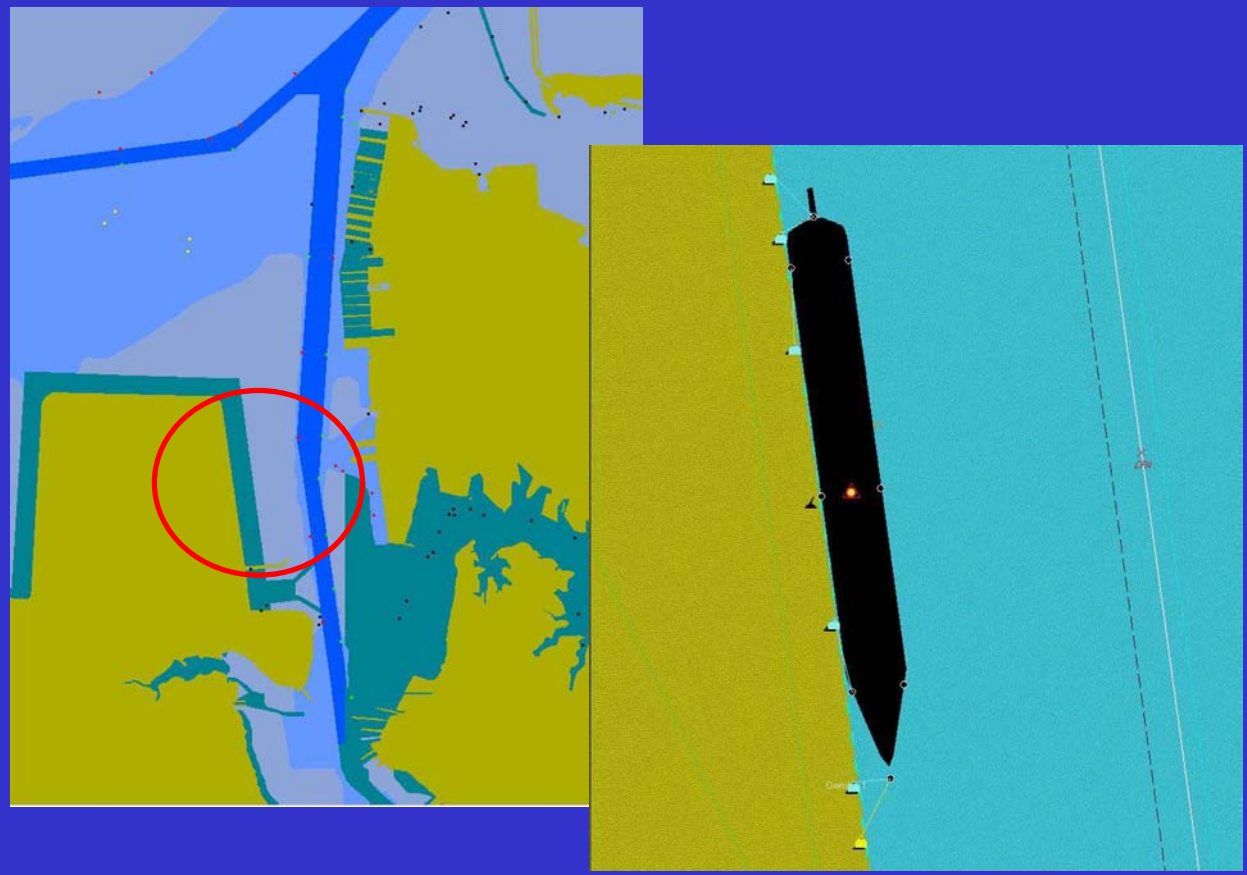
Craney Island Navigation Study



Craney Island Port Facility

- New large containerships
- New port facility on Eastward Expansion
- Proximity to Norfolk Harbor Channel


SUSAN MÆRSK
HELLERUP


MAERSK LINE


P&O Nedlloyd

Why is a Navigation Study Necessary?

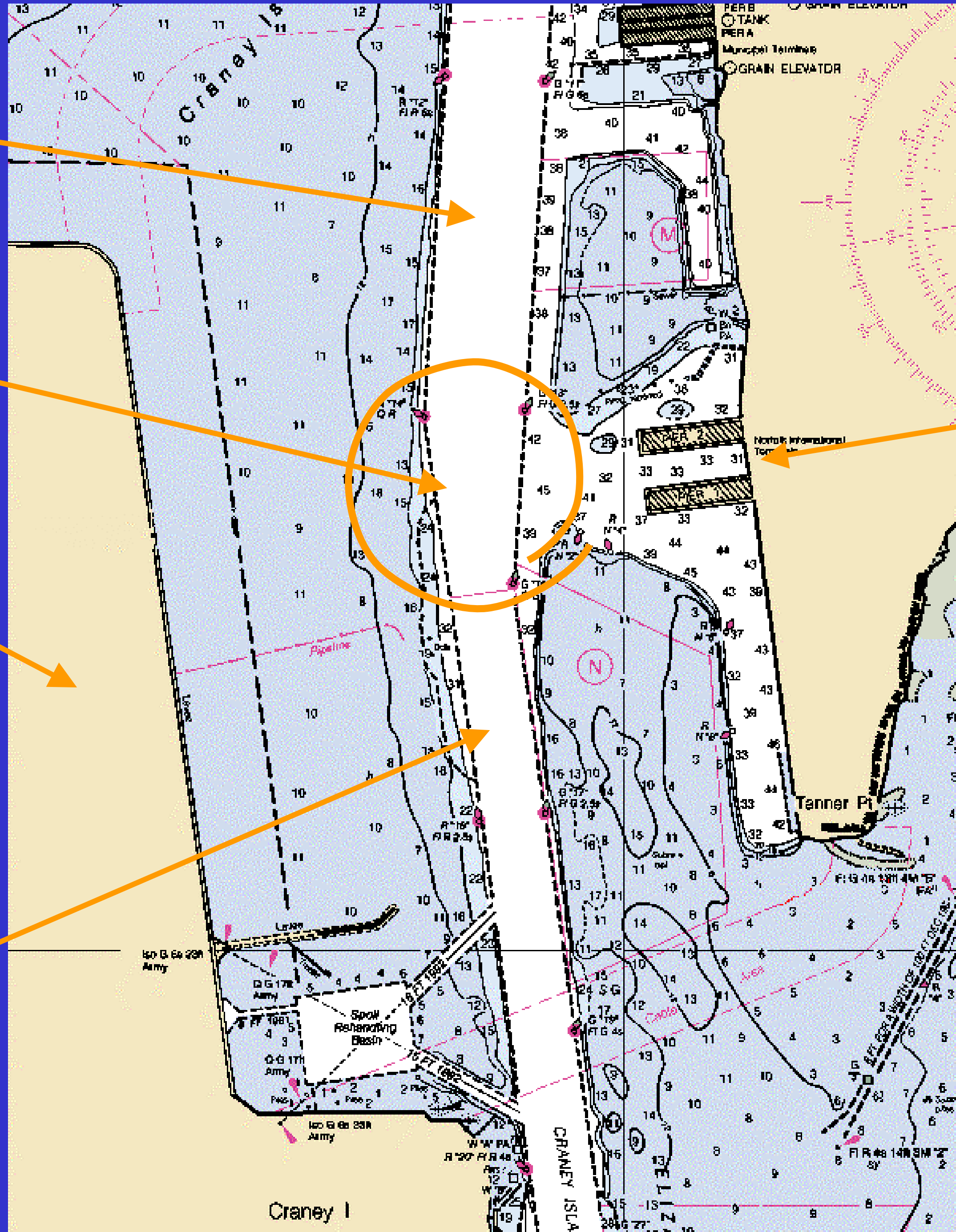
Norfolk Harbor Reach

Turn

Craney Island Disposal Area

Craney Island Reach

Norfolk International Terminal



Why is a Navigation Study Necessary?

Vessel and Port Operations Safety and Efficiency

- Examine Safety of Vessel Operations
- Passing Vessel Traffic in Norfolk Harbor Channel
- Port Operations Efficiency
- Find out what may need to be investigated in more detail in future phases

How is the Navigation Study being Performed?

Ship Simulation

"Stimulation"

- Advanced computing techniques
- "Virtual" port facility
- Human input
- Tool for design

It takes a team. . .

Participants include:

- Virginia Pilots Association
- Virginia Port Authority
- Moffatt and Nichol Engineers
- Norfolk District
- Computer Aided Operations Research Facility (CAORF) at USMMA, Kings Point, NY

Participants

- ERDC, Hydraulics Lab
- SAIC
- Danish Maritime Institute

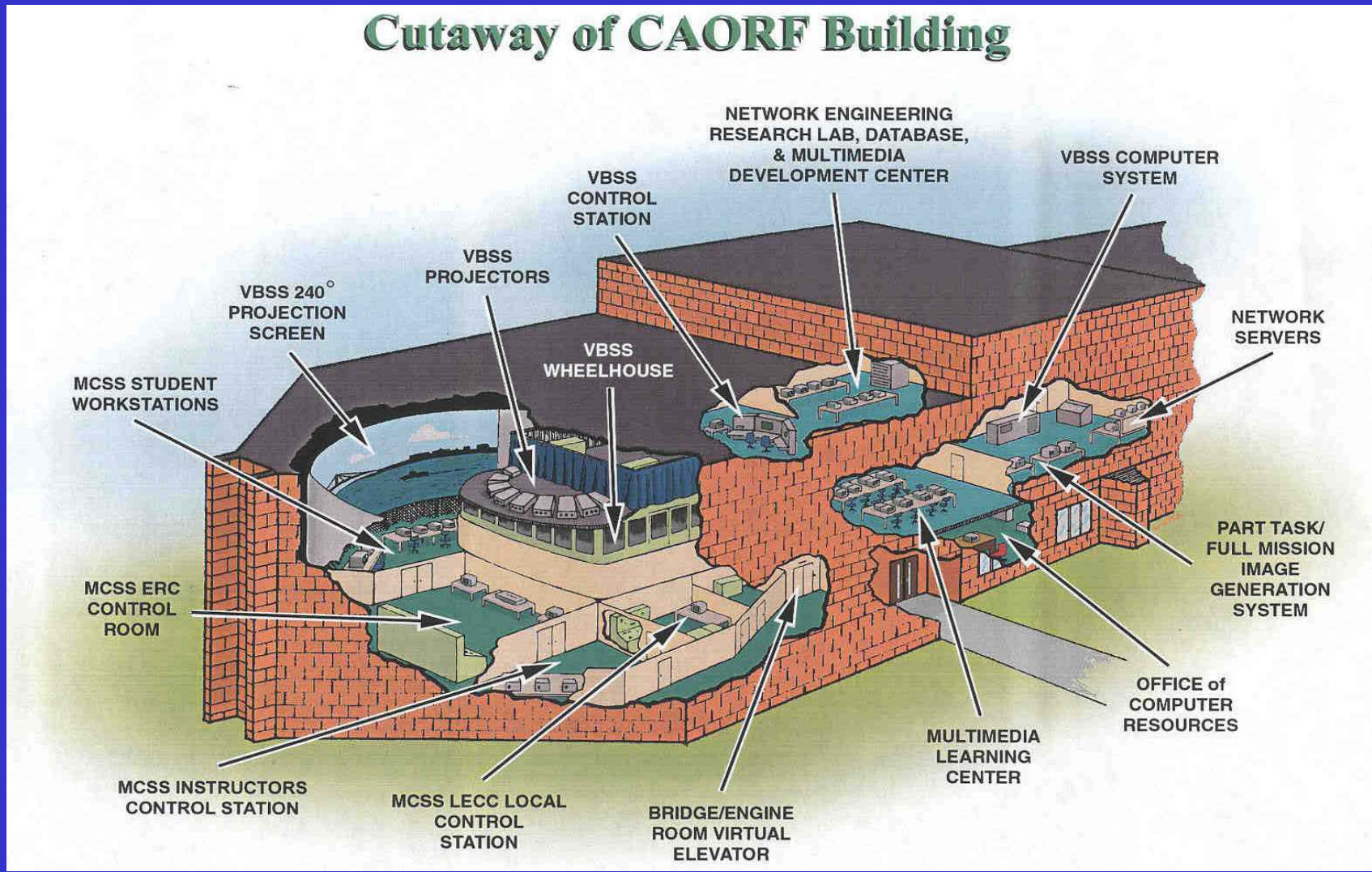
Interdisciplinary Effort
Expertise Pulled from Fields of:

- Civil Engineering
- Naval Architecture
- Mathematics
- Hydrodynamics
- Psychology
- Computer Science
- Statistics
- Oceanography
- Surveying
- Marine Specialty Professions

Other Input and Data Support

- US Coast Guard, Aids to Navigation
- US Coast Guard, Marine Safety Office
- NOAA
- US Navy
- Docking Pilots
- Others

The Simulator



What does the simulator look like?

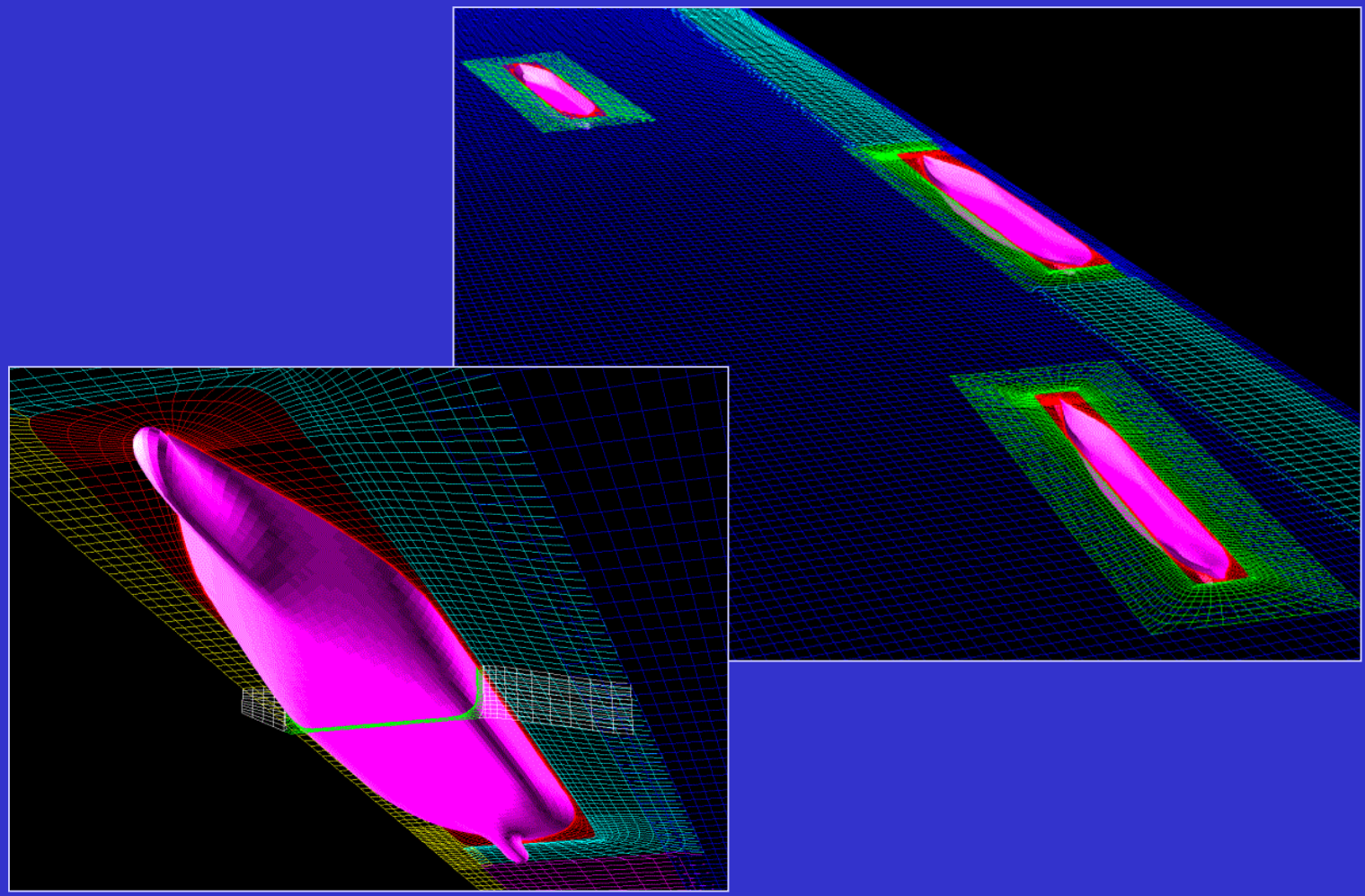
Sequence of Events

- Scoping Meetings
  (Final Meeting Nov 2000)
- Build Simulation Database
  (Completed Oct 2000)
- Validate Database
  (Completed Jun 2001)

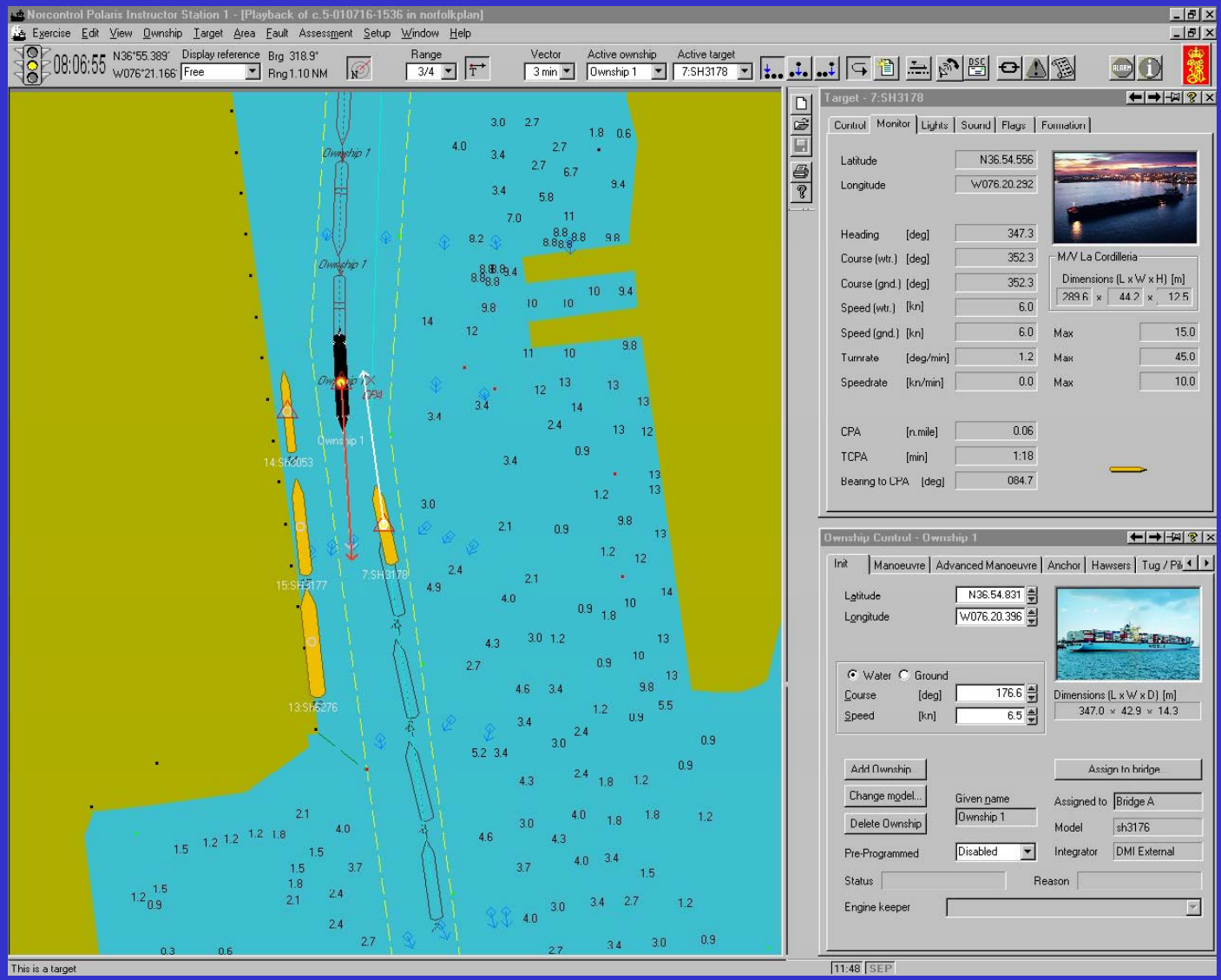
Sequence of Events

- Schedule Pilots and Simulator (Jun-Jul 2001)
  - Pilot Pre-interviews
  - Simulation Runs
  - Pilot Debriefing

Perform CFD Analysis (Completed Nov 2001)



Simulation Data Analysis



Mooring Lines

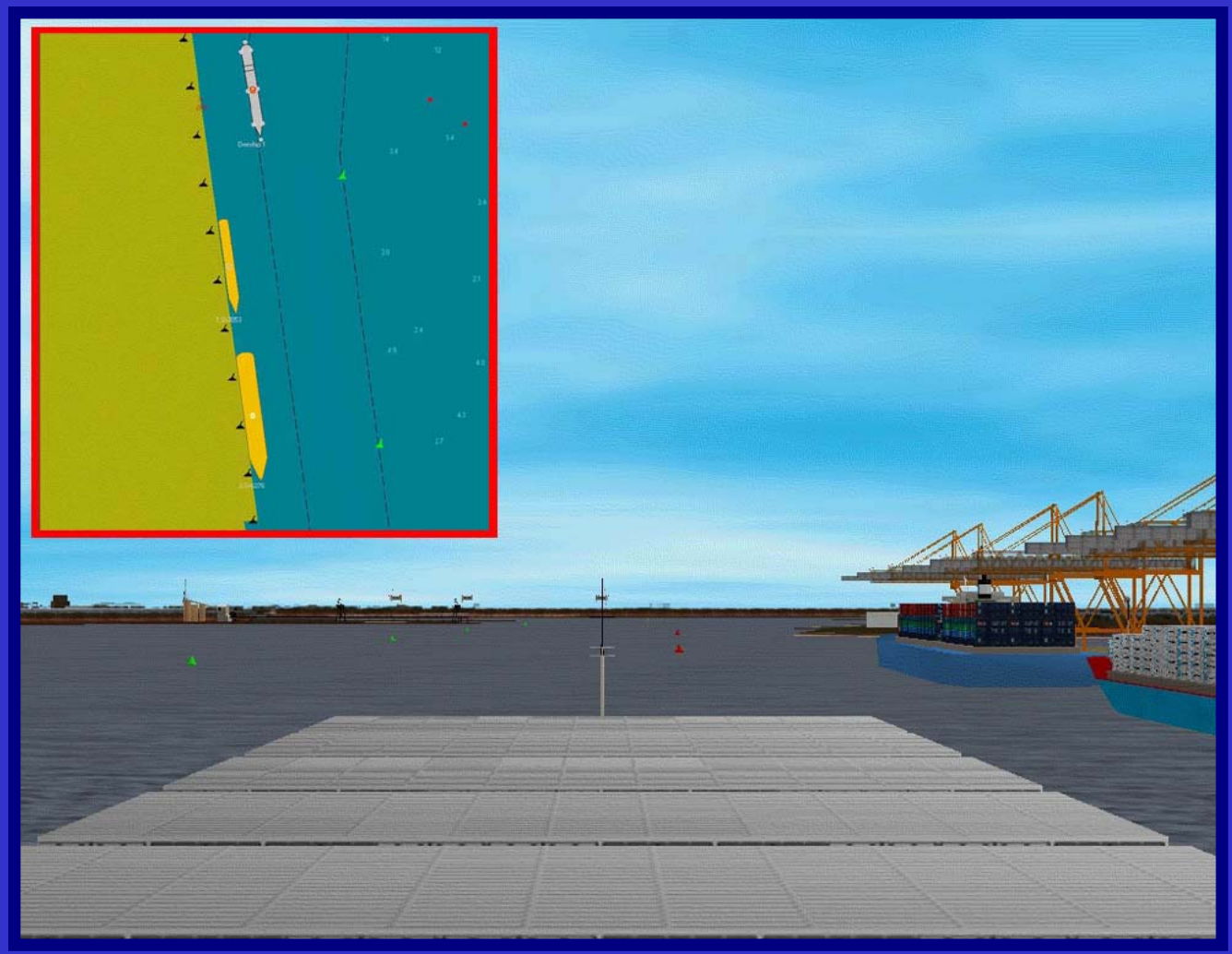
Where are we know?

- Independent Technical Review

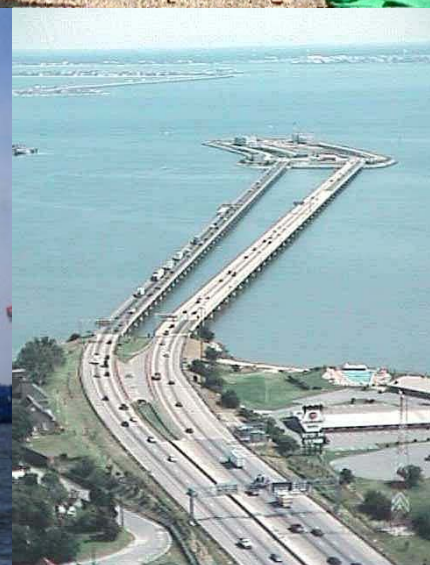
What Steps are Left?

- Develop study recommendations

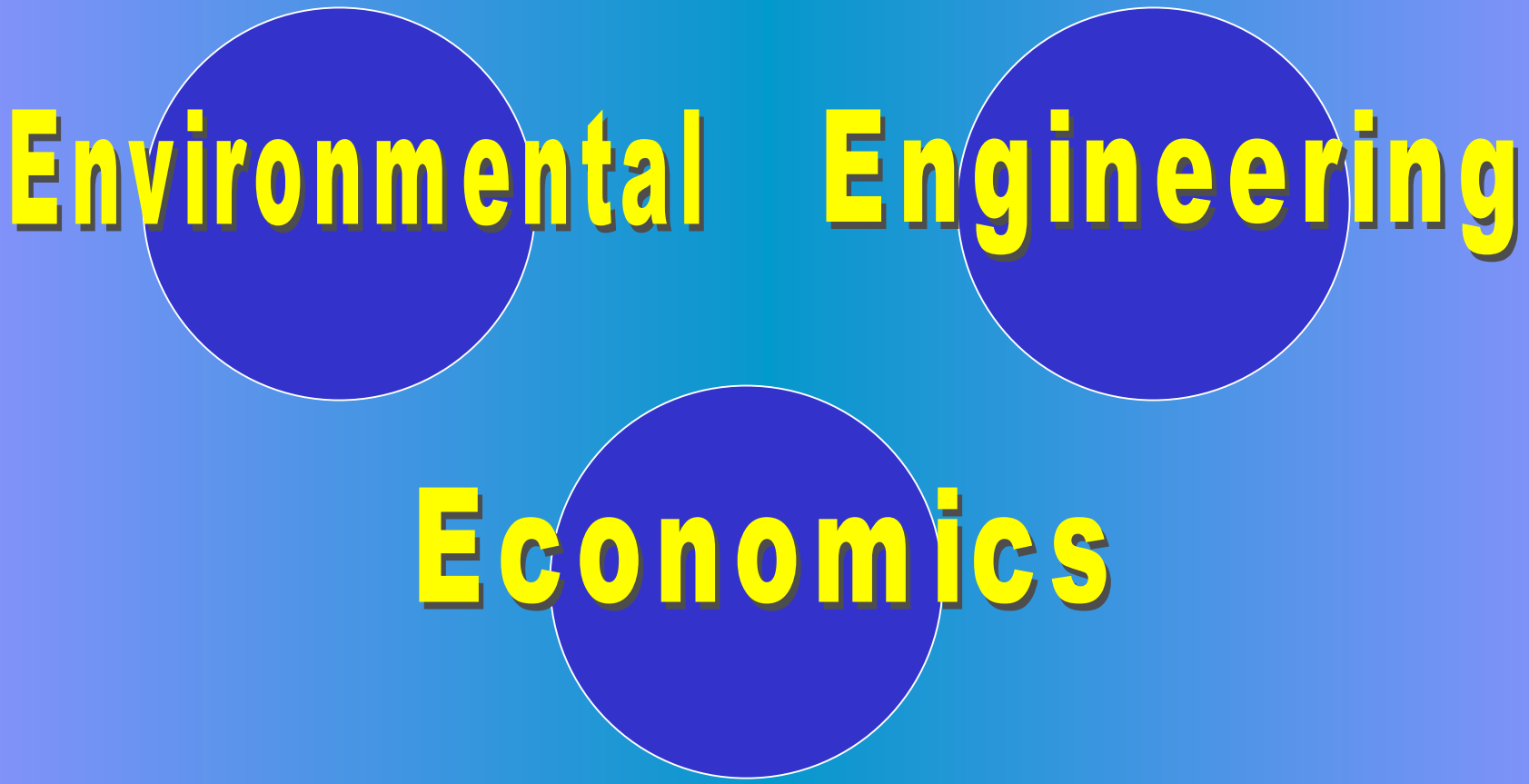
A Glimpse of the Future



The navigation study is a piece of the puzzle



Craney Island Expansion Feasibility Study - Formulation Process



Craney Island Expansion Feasibility Study - NEPA Document Content

Craney Island Expansion Feasibility Study - NEPA: Coordination

NEPA Technical Committee

Public Meetings

Public Involvement

Scoping Process

Stakeholder Meetings

Draft Report/EIS Review & Comment

Craney Island Expansion Feasibility Study - NEPA: Impacts

Natural Resources

Shellfish

Crabs

Worms

Fish

Birds & Wetlands

Endangered Species

Craney Island Expansion Feasibility Study - NEPA Process

Where do we go from here?

- Alternatives Analysis
- Document & Identify Resource Concerns
- Impacts & Mitigation Analysis
- Coordination & Scoping
- Draft EIS Preparation

CRANEY ISLAND EXPANSION MITIGATION EVALUATION

US Army Corps of Engineers
Norfolk District
January 2002

Mitigation Planning per ER 1105-2-100

- Avoid and minimize to greatest extent practicable; unavoidable impacts must be compensated to the extent justified
- Contain sufficient mitigation to ensure that recommended plan will have negligible adverse impacts on ecological resources
- Justification requires looking at a range of mitigation alternatives for cost effectiveness

Loss of Open Water Habitat

Natural Resources - Lost Habitat Values

Living, Feeding, Nursery,and Spawning Areas

Shellfish

Crabs

Worms

Fish

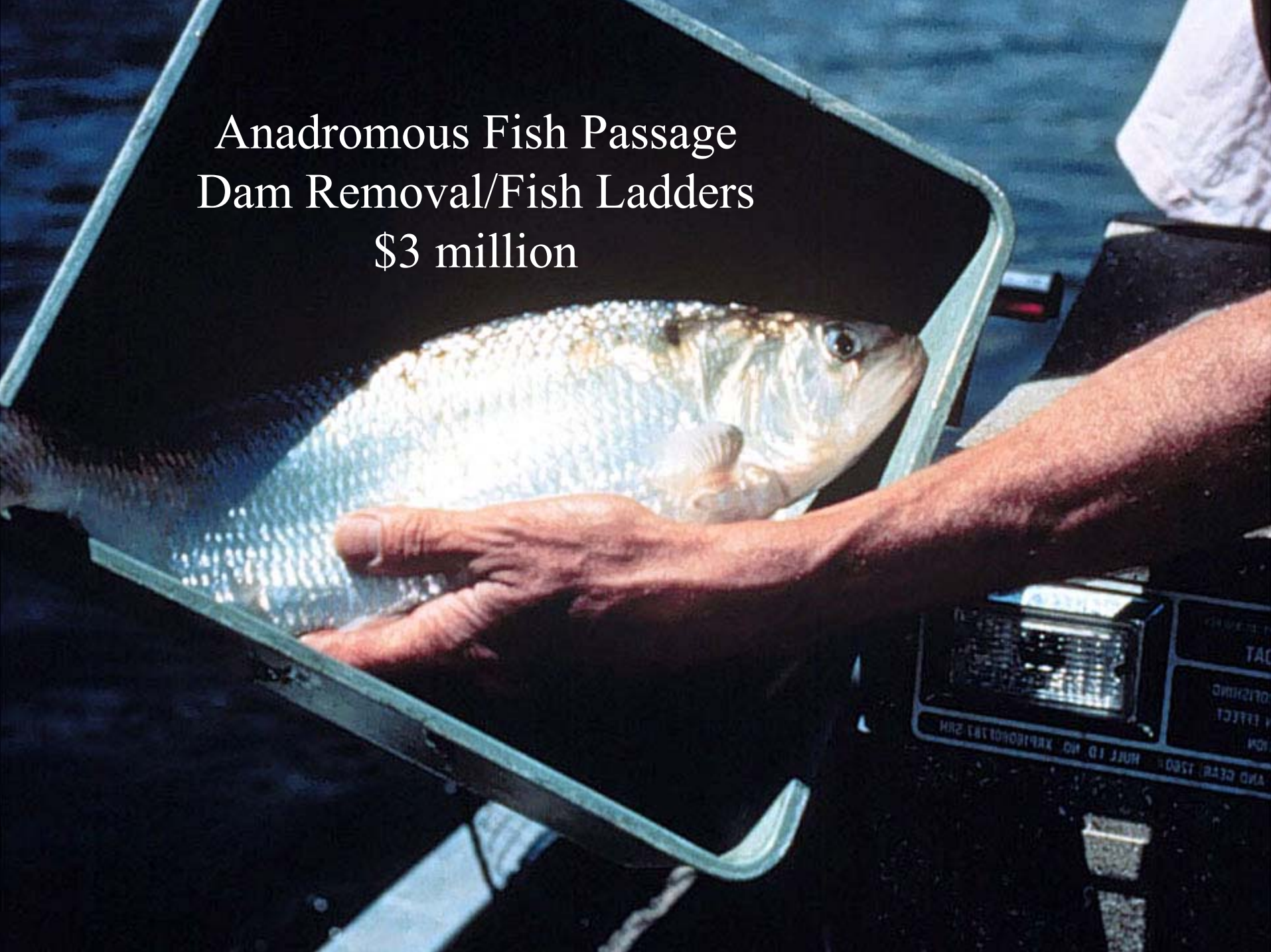
Birds & Other Wildlife

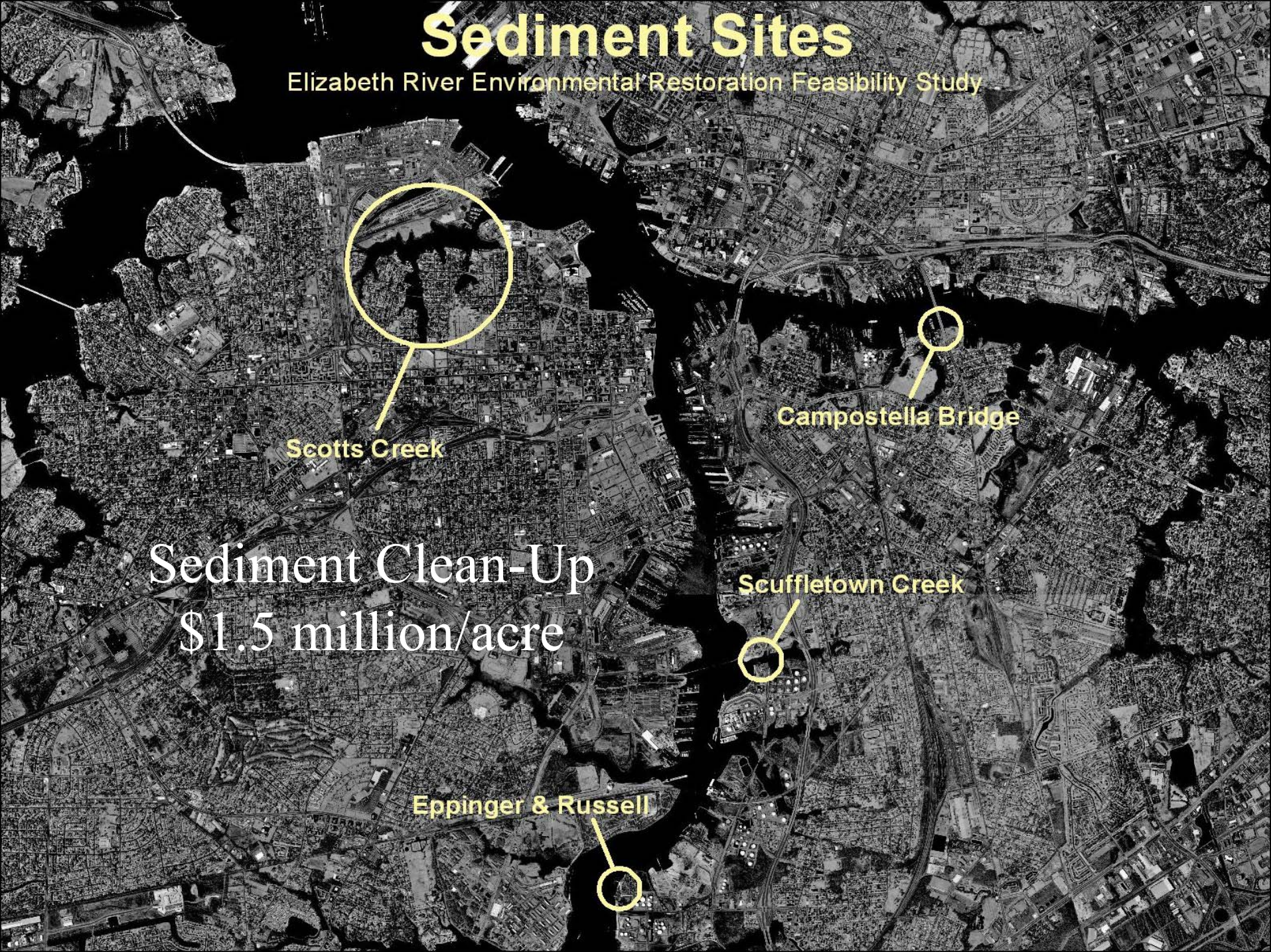

Oyster Restoration
$13,500/acre

Wetland Restoration
$100-350K/acre


Wetland Purchase
$40,000/acre


Shoreline/Wetland
Stabilization - $3 million
(e.g., Ragged Island - James River)


Anadromous Fish Passage
Dam Removal/Fish Ladders
$3 million


Sediment Sites
Elizabeth River Environmental Restoration Feasibility Study
Scotts Creek
Campostella Bridge
Sediment Clean-Up
$1.5 million/acre
Scuffletown Creek
Eppinger & Russell

Example Mitigation Options

- ⇒ **Oyster Restoration**
- ⇒ **Submerged Aquatic Vegetation Restoration**
- ⇒ **Wetland Restoration**
- ⇒ **Wetland/Riparian Purchase (Conservation)**
- ⇒ **Shoreline/Wetland Stabilization**
- ⇒ **Anadromous Fish Passage/Dam Removal**
- ⇒ **Sediment Clean-Up**

NEXT STEPS

- DEVELOP BASE (FEDERAL) AND LOCAL PLAN
- CONDUCT STAKEHOLDER MEETING
- COMPLETE FORMULATION ANALYSIS NOTEBOOK
- CONDUCT ALTERNATIVE FORMULATION BRIEFING
- PREPARE DRAFT FEASIBILITY REPORT
- COORDINATE DRAFT FEASIBILITY REPORT
- COMPLETE FINAL FEASIBILITY REPORT
- DIVISION ENGINEER'S PUBLIC NOTICE